



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,065	08/21/2003	Kenichi Yokouchi	P/2699-30	6981
2352 7590 11/16/2007 OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			EXAMINER MACARTHUR, SYLVIA	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 11/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/645,065

Applicant(s)

YOKOUCHI ET AL.

Examiner

Sylvia R. MacArthur

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-30, 40-46, 49-58 and 62-64 is/are pending in the application.
- 4a) Of the above claim(s) 9, 10, 12-16, 20, 21, 24, 40-46 and 49-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-8, 11, 17-19, 22, 23, 25-30 and 62-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/7/2007 has been entered.

Response to Arguments

2. Applicant's arguments filed 8/27/2007 have been fully considered, however, it was found that the prior art of Koichi et al (JP 7-122529) teaches an annular member that is a continuous ring. It is further noted that the gap has been claimed relative to the substrate which is not part of the apparatus and thus the limitation is interpreted as a matter of an intended use. If a smaller diameter substrate were used would not the claim be anticipated. Furthermore, claim 64 has been rejected basis 35 USC 112, 2nd paragraph as it uses a term "associated with" in line 7 that renders the claim indefinite. Perhaps applicant means *spaced from to form a gap with the substrate holder supporting the substrate*.

3. The prior art of Katsuhiko (JP 11-330031) fails to teach a continuous ring.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 64 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim uses a term "associated with" in line 7 that renders the claim indefinite.

Art Unit: 1792

Perhaps applicant means *spaced from to form a gap with the substrate holder supporting the substrate*. Applicant should amend the claim to positively recite what or how the association occurs structurally.

Claim Rejections - 35 USC § 102

6.. Claims 1,3-8,11,17-19,22,23,25,27-30 and 62-64 are rejected under 35 U.S.C. 102(b) as being anticipated by Saisu Koichi et al (JP 07-122529, as presented in the IDS mailed 12/26/2006).

Koichi et al teaches a sealed spin etching system for semiconductors.

Regarding claim 1: A substrate processing apparatus that removes an unwanted material on a surface of a peripheral portion of a substrate through etching by supplying etching liquid to the surface of the peripheral portion, the apparatus comprising:

an etching liquid supplying mechanism (nozzles 12a-d and nozzles 13a-d) that supplies the etching liquid to the peripheral portion of the substrate; and an annular member (seal ring 20) that has an inner periphery on or inside an outer periphery of the substrate and thereby defines a processing width to be processed by the etching liquid on the surface of the peripheral portion of the substrate, see Figs. 1,4, and 7. The substrate processing apparatus according to claim 1 wherein: the annular member 20 is placed in close proximity to the surface of the peripheral portion of the substrate while securing a certain gap such that allows the annular member to come in contact with a liquid film of the etching liquid formed on the surface of the peripheral portion, see Figs. 1,4, and 7 of Koichi et al. It is further noted that the gap has been claimed relative to the substrate which is not part of the apparatus and thus the limitation is interpreted as a matter of an intended use. The annular member of Koichi provides seal ring 20 that is shaped

Art Unit: 1792

as a continuous ring in that encircles the wafer without disruption in structure from another member.

Regarding claim 3: The substrate processing apparatus according to Claim 1 further comprising: substrate holding mechanism (work holder 10) that holds the substrate from one surface side thereof, wherein the annular member 20 is placed on the other surface side of the substrate.

Regarding claim 4: The substrate processing apparatus according to Claim 1, wherein: the etching liquid is supplied to the peripheral portion of the substrate from the etching liquid supplying mechanism while the substrate is held rest. The apparatus of Koichi et al is inherently capable of supplying etching liquid while the substrate is not rotating. This is also seen as a process limitation and is not given patentable weight.

Regarding claim 5: The substrate processing apparatus according to Claim 1, wherein the substrate W is a substrate of a nearly circular shape; the apparatus further comprises a substrate rotating mechanism that rotates the substrate; and the inner periphery of the annular member is of a circular shape having an inside diameter equal to smaller than a diameter of the substrate. See Fig. 7 of Koichi et al.

Regarding claim 6: The substrate processing apparatus according to Claim 5, wherein: the etching liquid is supplied to the peripheral portion of the substrate from the etching liquid supplying mechanism while the substrate rotated by the substrate rotating mechanism, see abstract teaches spin etching wherein the work holder 10 rotates.

Art Unit: 1792

Regarding claim 7: The substrate processing apparatus according to Claim 1 wherein: the annular member 20 includes a substrate-opposing surface that extends outwards from the inner periphery and opposes the surface of the peripheral portion of the substrate.

Regarding claim 8: The substrate processing apparatus according to Claim 7 wherein: the substrate-opposing surface is a plane nearly parallel the surface of the peripheral portion of the substrate, see Figs. 1, 4, and 7 of Koichi et al.

The substrate processing apparatus according to Claim 7 wherein: the substrate-opposing surface is an inclined plane inclined to reduce an interval between the substrate-opposing surface and the substrate as heading toward the inner periphery, see Fig. 7.

The limitation of this claim has been made relative to a size of substrate. Note that the apparatus is what it is and not what it does and that the inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims, see *In re Young*, 75 F. 2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Oto*, 312 F. 2d 937, 136 USPQ 458, 459 (CCPA 1963)).

Regarding claim 11: The substrate processing apparatus according to Claim 7, wherein: the annular member includes a projection that protrudes from the substrate-opposing surface toward the substrate and thereby limits the etching liquid heading toward an inside of the substrate, see Fig. 7.

Regarding claim 17: Claim 1, wherein: the etching liquid supplying mechanism includes a nozzle (nozzles 12a-d and nozzles 13a-d) that supplies the etching liquid toward a surface of the substrate on an opposite side to a surface containing the surface of the peripheral portion.

Regarding claim 18: The substrate processing the nozzle supplies the etching

Art Unit: 1792

liquid toward a central portion of the surface on the opposite side, (nozzles 12a-d and nozzles 13a-d), Fig. 4.

Regarding claim 19: The substrate processing apparatus according claim 1, wherein: the annular member has an outer wall surface positioned inside the outer periphery of the substrate, see Figs. 7 and 8.

Regarding claim 22: The substrate processing claim 1, wherein: apparatus according to the etching liquid supplying mechanism includes a dispense port (nozzles are provided to supply fluid from in a direction perpendicular to the direction of the substrate see Fig.1 nozzles. 12a-d and 13a,b) through which the etching liquid is dispensed direction perpendicular to a surface of the substrate direction inclined toward an outside of the substrate.

Regarding claim 23: The substrate processing claim 1, wherein: apparatus according the annular member (seal ring 20) includes an inner wall surface that in a direction to go away from rises from the inner periphery surface of the substrate, see Figs. 7 and 8.

Regarding claim 25: The substrate processing apparatus according to claim 1, further comprising a lid member (seal holder 21) that substantially clogs an internal space of the annular member.

Regarding claims 27-29: The substrate processing apparatus according to claim 1, further comprising: a gas supplying mechanism that supplies an internal space the annular member with a gas, see Fig. 1 and discussed in the abstract describing the use of nitrogen gas.

Regarding claim 30: The substrate processing apparatus according to

Art Unit: 1792

claim 1 further comprising: a protection liquid etching protection liquid (water through nozzles 13 a-d) toward a center of the substrate an inner side of the annular member, supplying mechanism that supplies etching protection liquid toward a center a center of the substrate at an inner side of the annular member, see Fig. 1.

Regarding claims 62-64: The inner periphery is disposed inside the outer periphery of the substrate see the location of the annular member 20 relative to the substrate 300. Herein the term "associated with" is interpreted as "is near the periphery".

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koichi et al in view of Katsuhiko (JP 11-330031).

The teachings of Koichi et al were discussed above. Koichi et al fails to teach a groove.

Recall Katsuhiko teaches an annular member formed of discrete portions 4, 6, and 120.

Fig. 6 of Katsuhiko illustrates that an annular groove is formed. The motivation to modify the apparatus of Koichi et al with the taught grooves of Katsuhiko is that these grooves increase the available surface area for fluid flow. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Koichi et al with the taught grooves of Katsuhiko.

Conclusion


Art Unit: 1792

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438.

The examiner can normally be reached on M-Th during the hours of 8 a.m. and 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sylvia R. MacArthur
Primary Examiner
Art Unit 1792

November 13, 2007